

Health Care Personnel and Influenza Vaccine

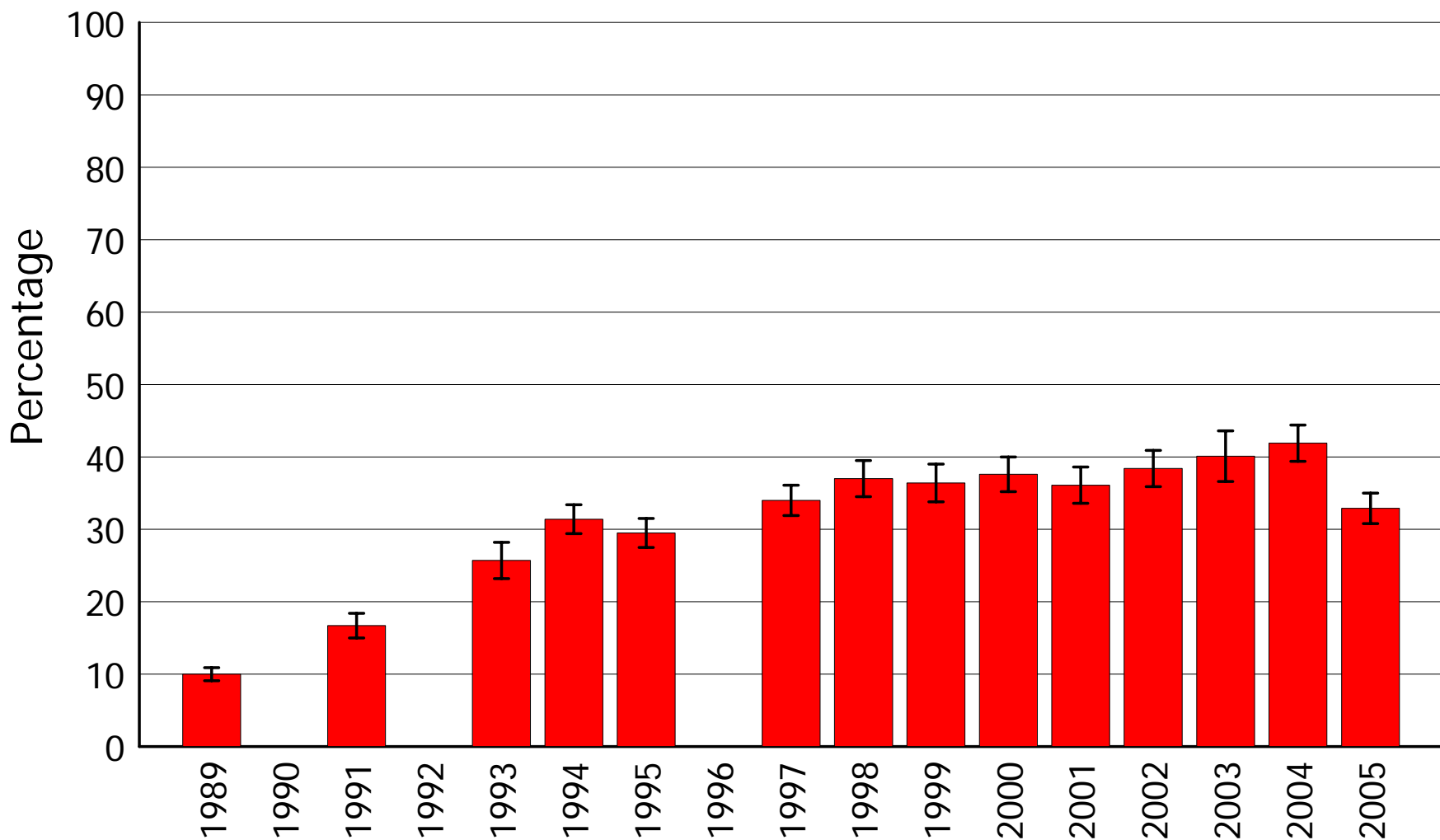
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Conferences, 2007

Current ACIP Recommendations

- **“All HCP, as well as those in training for health-care professions, should be vaccinated annually against influenza. Persons working in health-care settings who should be vaccinated include physicians, nurses, and other workers in both hospital and outpatient-care settings, medical emergency-response workers (e.g., paramedics and emergency medical technicians), employees of nursing home and chronic-care facilities who have contact with patients or residents, and students in these professions who will have contact with patients.”**

Self-Reported Influenza Vaccination Coverage Trends 1989-2005

United States, National Health Interview Survey (NHIS)



Reasons (Excuses?) for HCP Non-Compliance

- Perception that vaccine is ineffective^{1,2}
- Perception that vaccine is unnecessary^{1,2}
- Dislike of injections
- Belief that vaccine causes the flu²
- Inconvenience¹

¹Takayanagi et al. Attitudes of health care workers to influenza vaccination: why are they not vaccinated? Am J Infect Control 2007; 35: 56-61

²WillisBC, Wortley P. Nurses' attitudes and beliefs about influenza and the influenza vaccine: A summary of focus groups in Alabama and Michigan. Am J Infect Control 2007; 35: 20-24

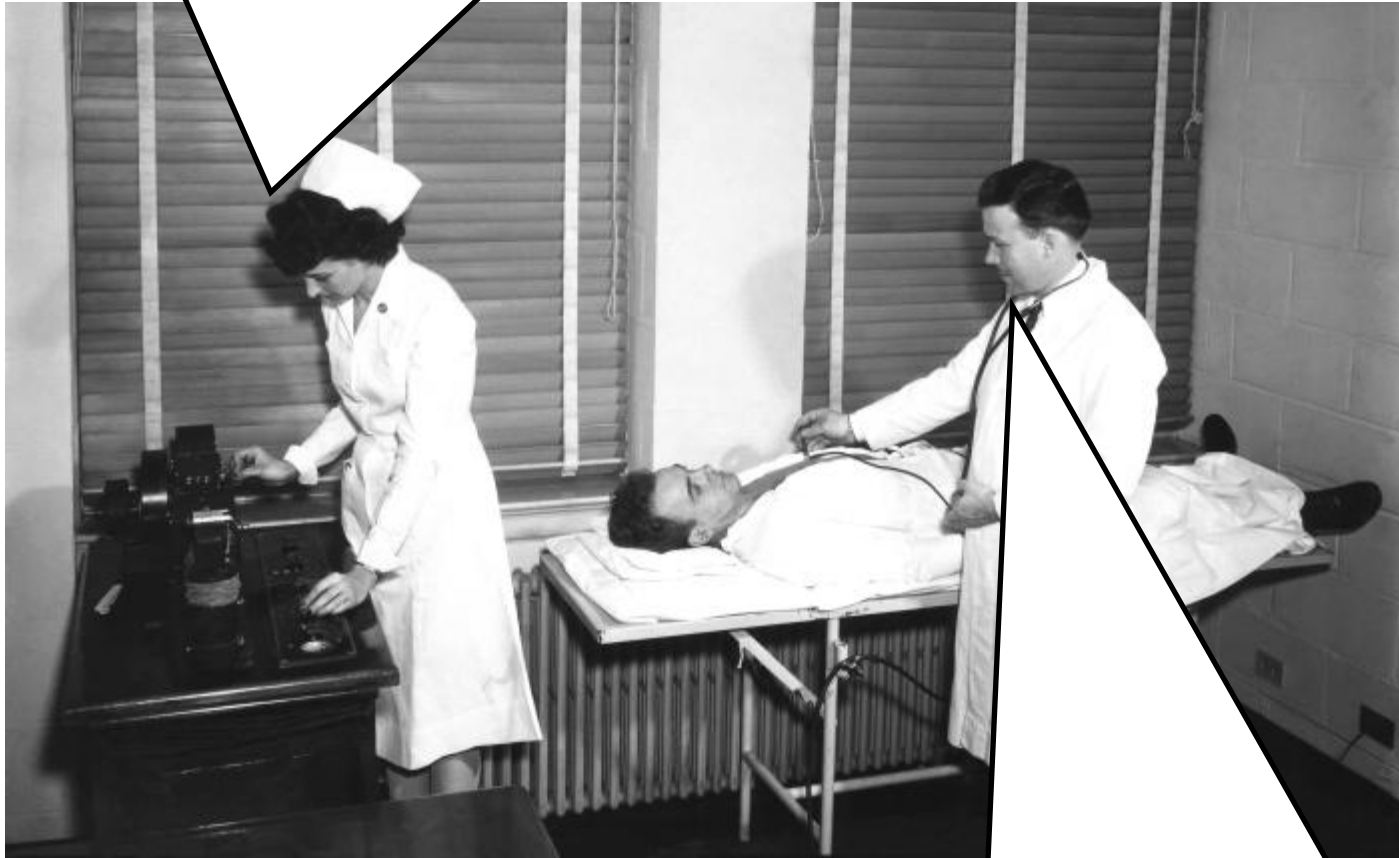
Reasons for HCP Compliance

- Self-protection¹
- Protect the patient^{1,2}
- Better to have the vaccine than influenza¹
- Recommendation by supervisor¹
- Avoid missing work¹
- Belief that the vaccine does not cause influenza¹
- Recommended by physician¹
- Received written request for compliance¹
- Have cared for patients with severe influenza¹

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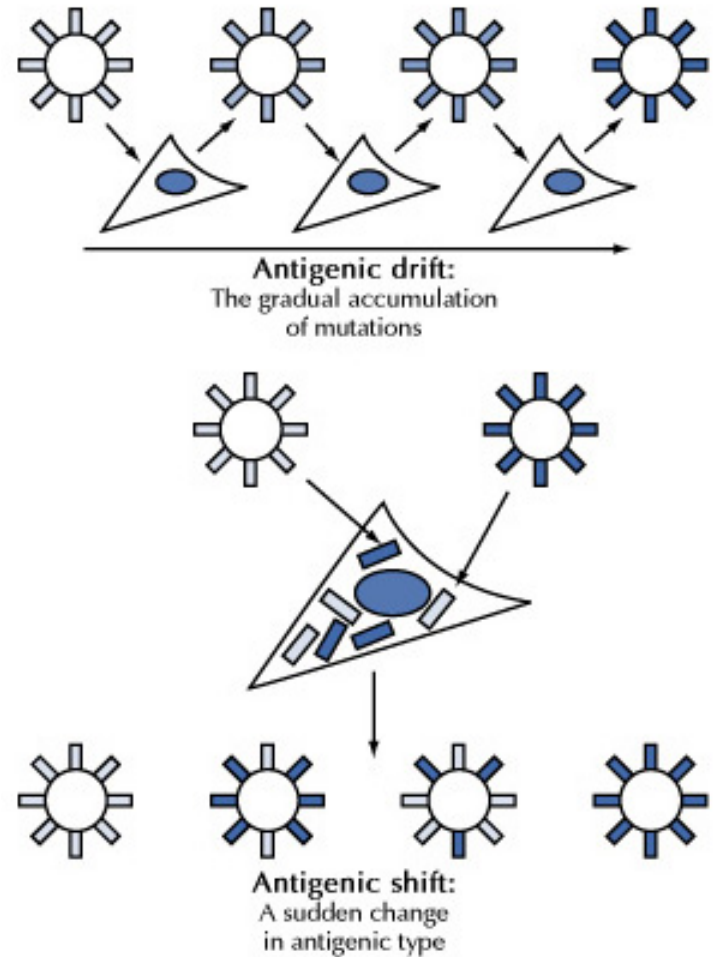
I Was Vaccinated Last Year



The Vaccine is Unnecessary

“Sloppy, Capricious, Promiscuous”

- No “proof-reading” mechanism during replication
 - Allows small errors to accumulate
 - “Drift”
- Segmented genome
 - Allows swapping of gene segments during co-infection
 - “Shift”

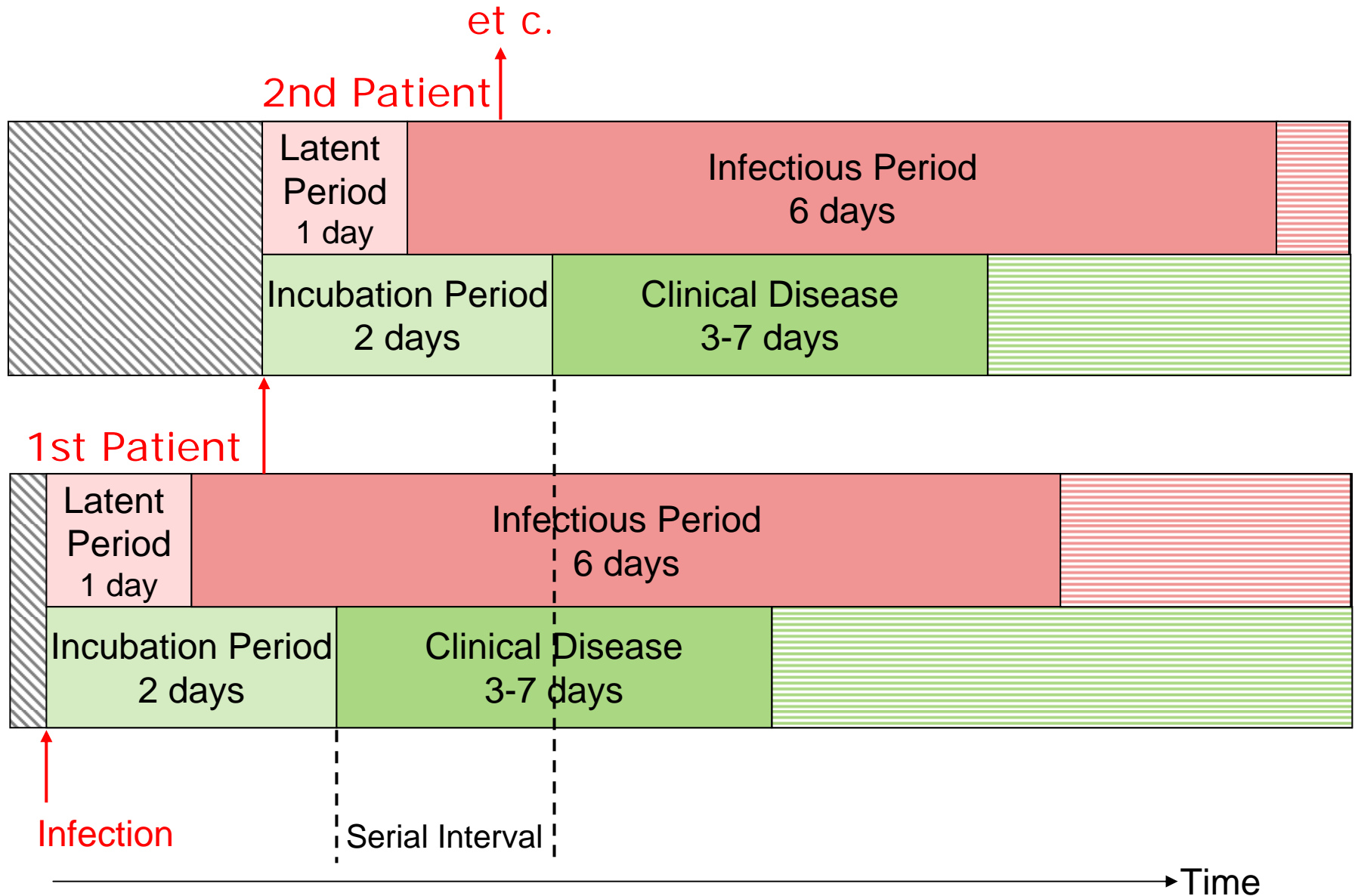


Transmission I

- Large respiratory droplets
- Direct contact transfer of virus from contaminated hands to the nose or eyes
- Exposure to small-particle aerosols in the immediate vicinity of the infectious individual
 - Suggested by some observational studies
- NO convincing evidence for airborne transmission over large distances



Transmission II



Evidence

- Sartor C et al. Disruption of services in an internal medicine unit due to a nosocomial influenza outbreak. *Infect Control Hosp Epidemiol* 2002; 23: 615-619
- Malvaud S et al. Nosocomial outbreak of influenza virus A (H3N2) infection in a solid organ transplant department. *Clinical Transplantation* 2001; 72(3): 535-537
- Carman W et al. Effects of influenza vaccination of health-care workers on mortality of elderly people in long-term care: a randomised controlled trial. *Lancet* 2000; 355: 93-97
- Slinger R and Dennis P. Nosocomial influenza at a Canadian pediatric hospital from 1995 to 1999: opportunities for prevention. *Infect Control Hosp Epidemiol* 2002; 23: 627-629
- Horcajada JP et al. A nosocomial outbreak of influenza during a period without influenza epidemic activity. *Eur Respir J* 2003; 21: 303-307
- Munoz F et al. Influenza A virus outbreak in a neonatal intensive care unit. *Pediatr Infect Dis J* (1999); 18(9): 811-5
- Cunney R et al. An outbreak of influenza A in a neonatal intensive care unit. *Infect Control Hops Epidemiol* (2000); 21 (7): 449-54

I Don't Want to Miss Work



I Want to Protect
my Patients

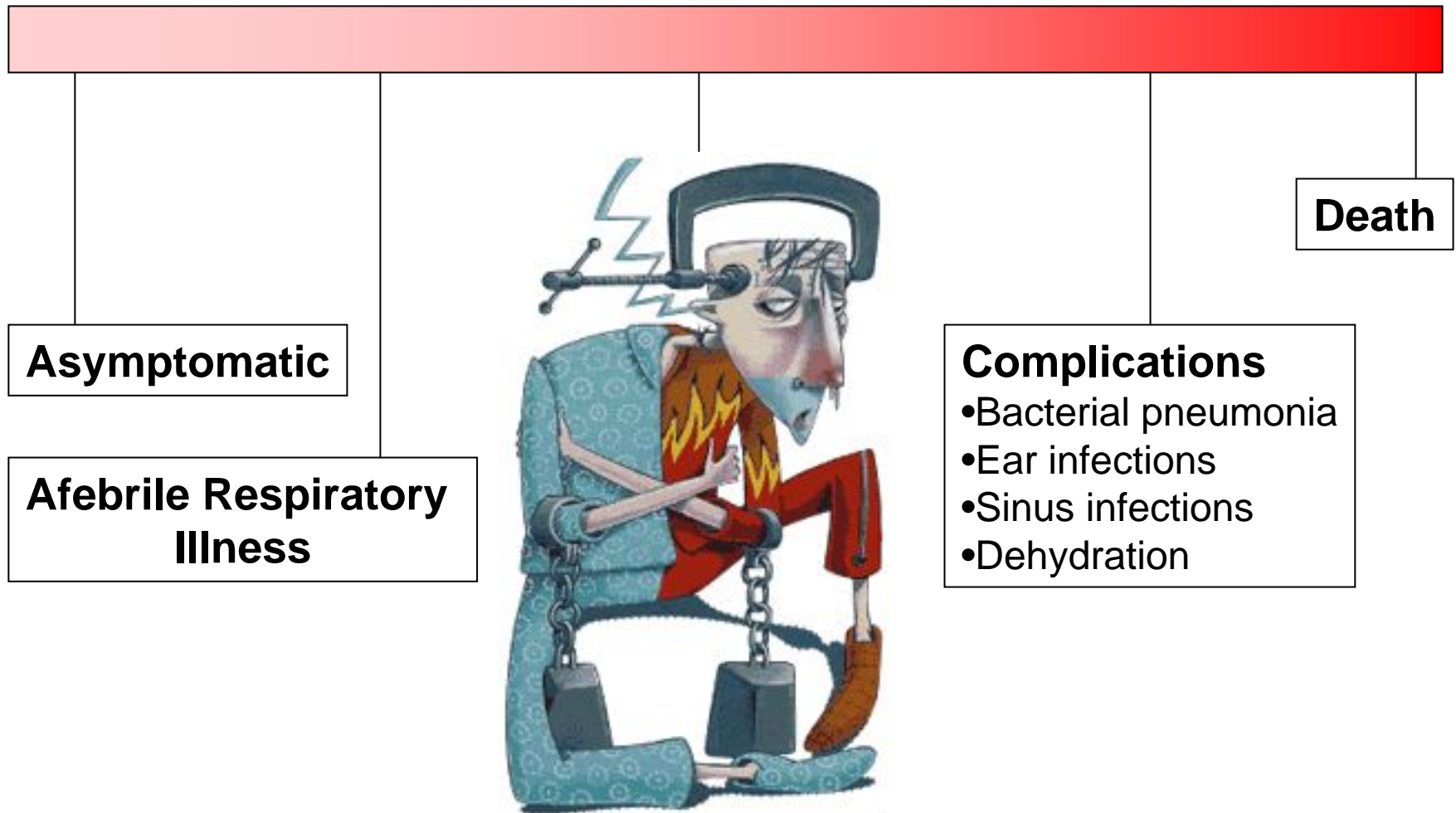
I Want to Protect
Myself

I Don't Get the Flu

I Never Get Sick



Spectrum of Signs and Symptoms



Asymptomatic and Pre-Symptomatic Infection

Asymptomatic

- Foy, et al. Influenza B in households: virus shedding without symptoms or antibody response. Am J Epidemiol 1987; 126:506-15
- Couch, et al. Correlated studies of a recombinant influenza-virus vaccine. 3. Protection against experimental influenza in man. JID 1971; 124: 473-80
- Khakpour, et al. Proved viraemia in Asian influenza (Hong Kong variant) during incubation period. BMJ 1969; 4: 208-209
- Philip, et al. Epidemiologic studies on influenza in familial and general population groups, 1951-1956
- Monto, et al. Tecumseh study of illness. XIII. Influenza infection and disease, 1976-1981. Am J Epidemiol 1985; 121: 811-22

Pre-Symptomatic

- Frank, et al. Patterns of shedding of myxoviruses and paramyxoviruses in children. JID 1981; 144: 433-41.
- Davis, et al. Epidemiologic studies on influenza in familial and general population groups. 1951-1956. III. Laboratory observations. Am J Hyg. 1961; 73: 138-47
- Khakpour, et al. Proved viraemia in Asian influenza (Hong Kong variant) during incubation period. BMJ 1969; 4: 208-209

Incidence and Recall of Influenza

- 23% of unvaccinated health care personnel had serological evidence of influenza infection during a mild season
 - 59% did not recall having influenza
 - 28% did not recall having *any* respiratory infection
- High rate of self-misdiagnosis among HCP

Elder AG, O'Donnell B, McCruden EAB, Symington IS, Carman WF. Incidence and recall of influenza in a cohort of Glasgow healthcare workers during the 1993-1994 epidemic: results of serum testing and questionnaire. *BMJ* (1996); 313: 1241-2



I Have Cared for
Patients with
Severe Influenza

The Vaccine Doesn't Work

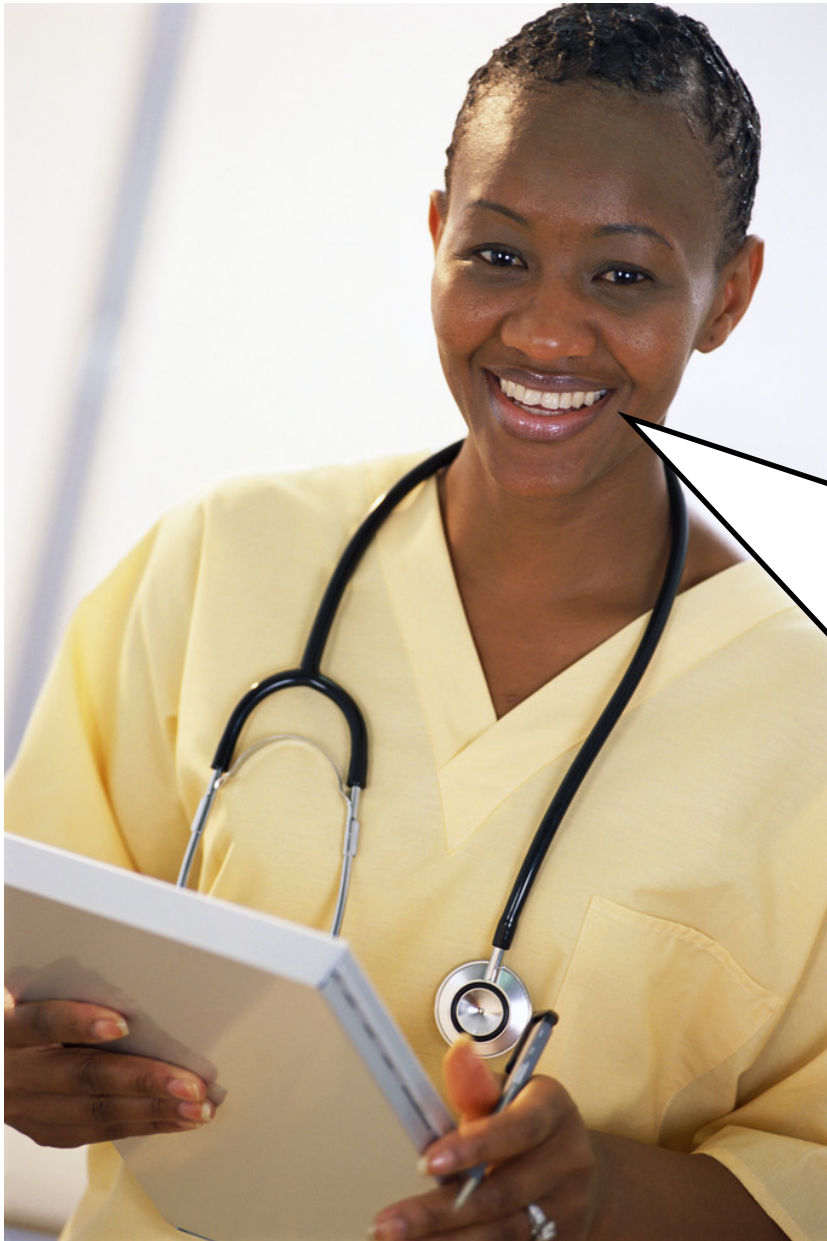


Vaccine Efficacy & Effectiveness

- Vaccine efficacy & effectiveness depends on:
 - Age of vaccine recipient
 - Immunocompetence of vaccine recipient
 - Degree of similarity between the viruses in the vaccine and those in circulation
 - The outcome being measured

Adults Up To 65 Years of Age

- Healthy adults, match between vaccine and circulating strains
 - TIV prevents lab-confirmed influenza illness among ~70%--90%
 - Decreased work absenteeism and use of health-care resources
- Healthy adults, mis-match between vaccine and circulating strains
 - Efficacy against laboratory-confirmed influenza illness was 50%--77%
 - Protection against influenza-related hospitalization was 90%
- Adults at risk for influenza complications
 - In a mis-match season, effectiveness for prevention of lab-confirmed influenza was 48%, effectiveness against hospitalization among adults aged 50--64 yrs with high-risk conditions was 36%
 - A case-control study showed vaccination reduced deaths attributable to any cause 78% and reduced hospitalizations due to respiratory infections or cardiopulmonary diseases 87%
 - In diabetic patients, vaccination was associated with a 56% reduction in any complication, a 54 % reduction in hospitalizations, and a 58% reduction in deaths
 - Vaccinated pregnant women have protective concentrations of anti-influenza antibodies
 - Passive transfer of anti-influenza antibodies that might provide protection from vaccinated women to neonates has been reported



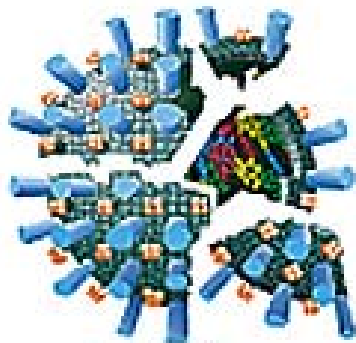
The Best Way to
Prevent
Influenza is by
Getting Flu
Vaccine Every
Year

The Flu Shot Will Give Me the Flu

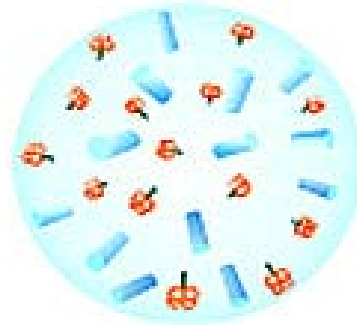


The Flu Shot Will Make Me Sick

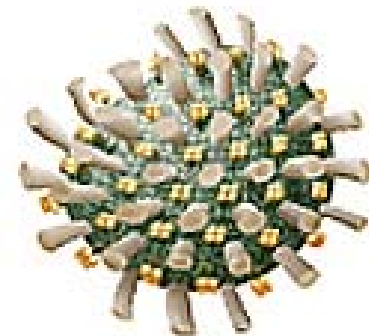
Influenza Vaccine Viruses



Split virus
aka "subvirion"



Subunit
(surface antigen)



Live attenuated

Trivalent Inactivated (Killed) Influenza Vaccine

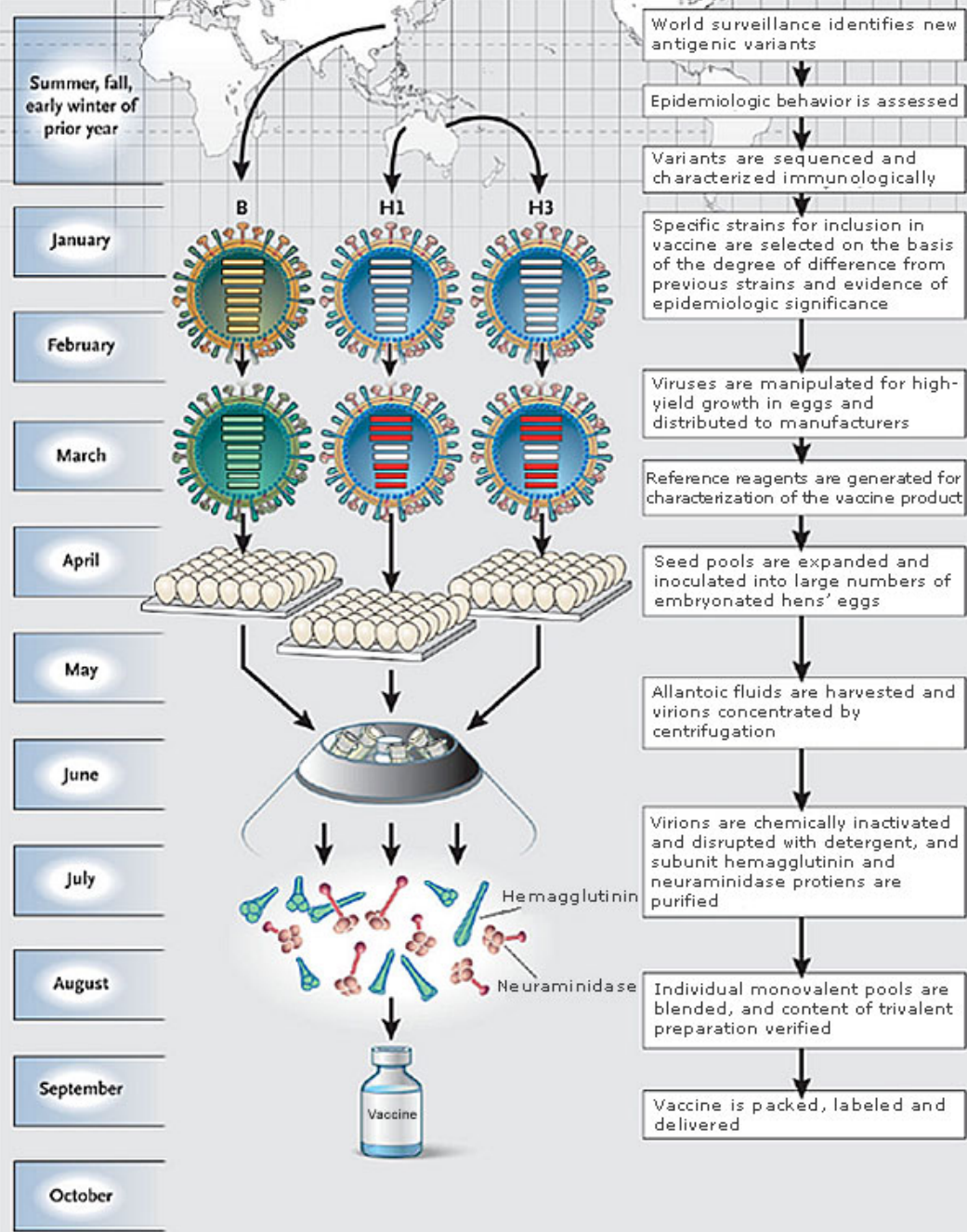
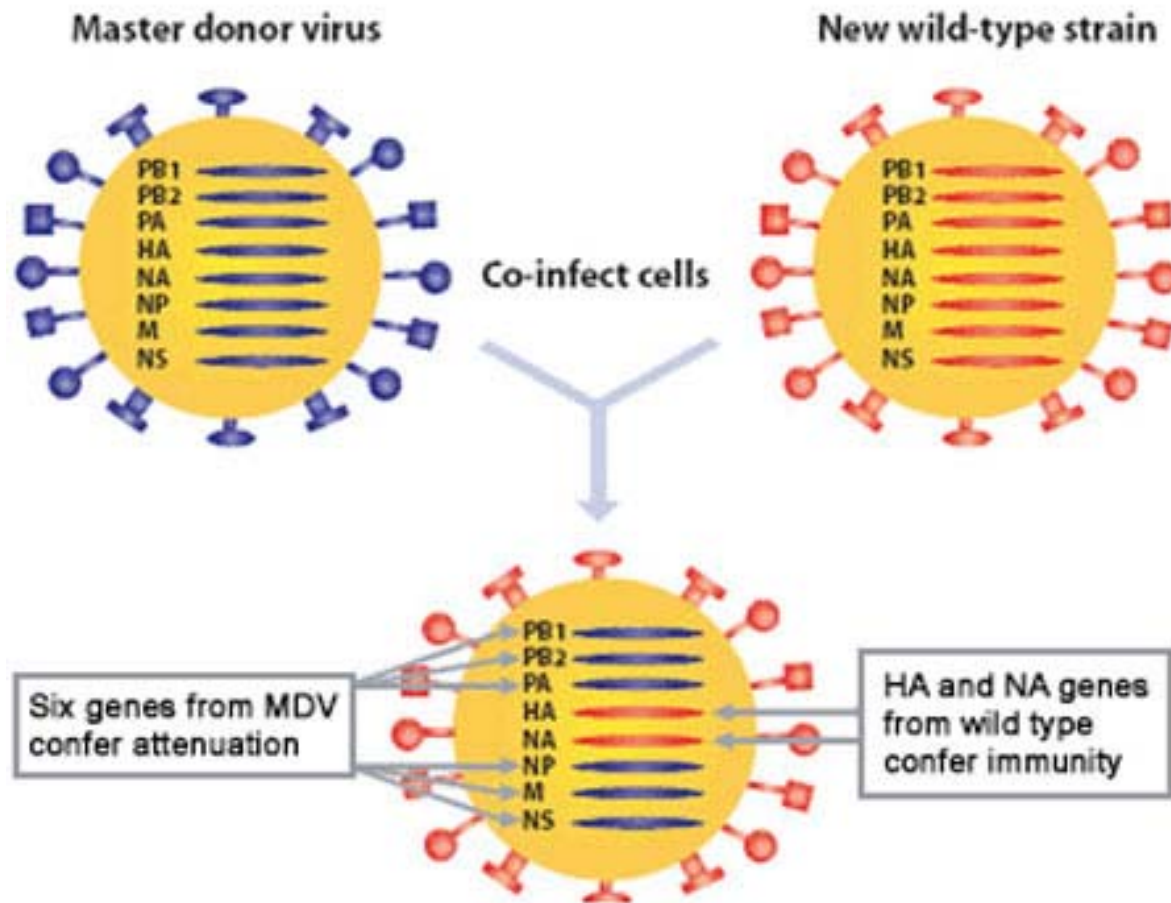


Diagram: Outline of the Annual Process of Development, Manufacturing and Distribution of Influenza Vaccines

Live Attenuated Influenza Vaccine



This virus can grow in the nose and throat, but not in the lower respiratory tract where the temperature is higher

Vaccine Side Effects

TIV

- Soreness, redness, or swelling where the shot was given (most common side effect)
- Fever (low grade)
- Aches
- If these problems occur, they begin soon after the shot and usually last 1 to 2 days

LAIV

- Runny nose
- Headache
- Sore throat (adults)
- Cough (adults)
- Vomiting (children)
- Muscle aches (children)
- Fever (children)

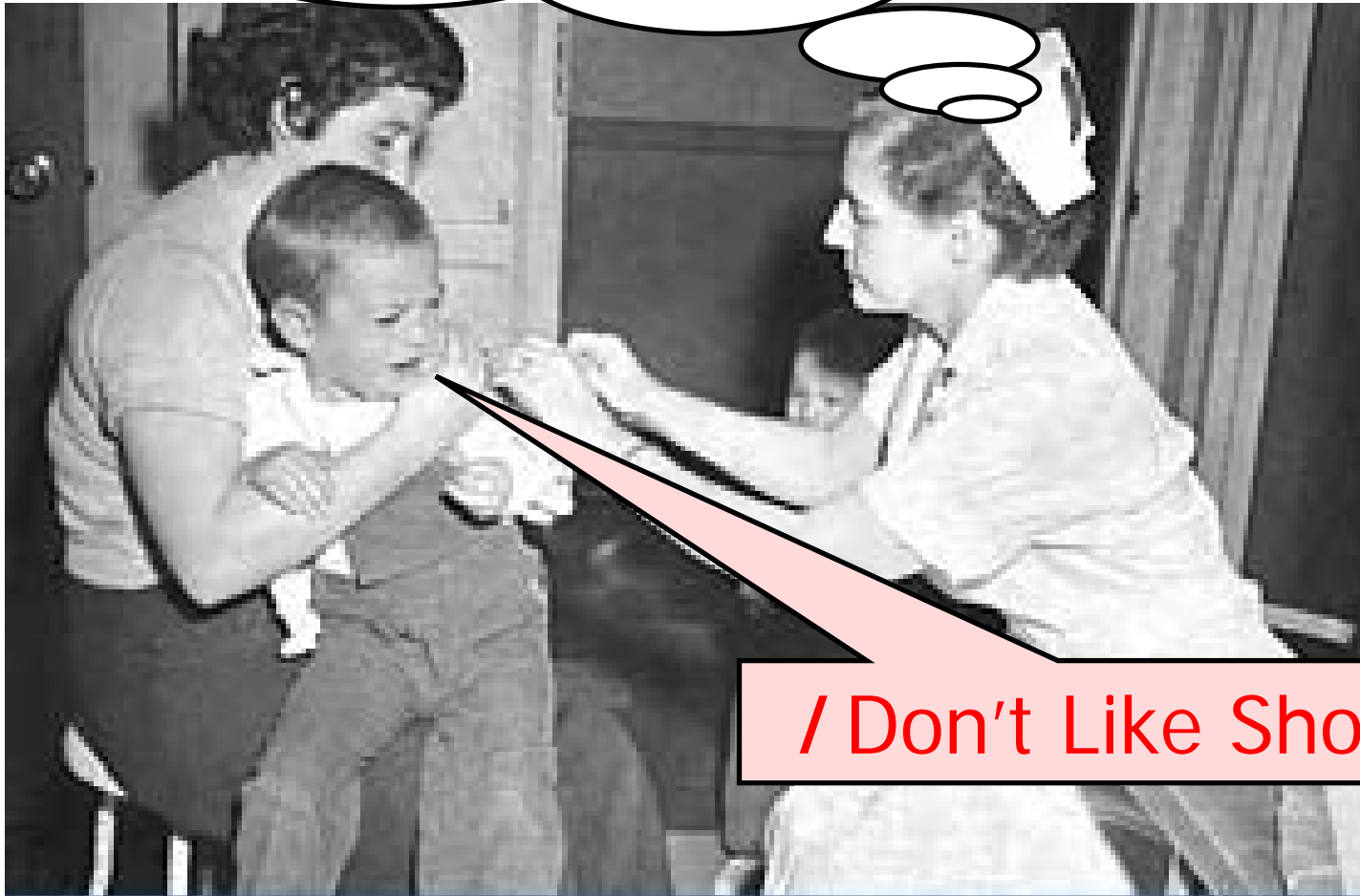
- Almost all people who receive flu vaccine have no serious problems from it
- On rare occasions, flu vaccination can cause serious problems, such as severe allergic reactions

The Flu Vaccine Can't Give you Flu



It's Better to Have the Vaccine than Flu

I Don't Like Shots



/ Don't Like Shots!

LAIV for Health Care Professionals

- LAIV can be given to healthy, non-pregnant persons aged 2-49 yrs, including HCP and close contacts of high-risk persons
 - Give TIV to HCP caring for severely immunosuppressed persons (e.g., patients with hematopoietic stem cell transplants) who require a protective environment (typically defined as a specialized patient-care area with a positive airflow relative to the corridor, high-efficiency particulate air filtration, and frequent air changes)
- No preference is indicated for LAIV or TIV when considering vaccination of healthy, non-pregnant persons aged 2--49 years.



It's Inconvenient

Convenience

- 31% of physicians and nurses surveyed did not receive influenza vaccine because it was inconvenient
- See your Flu Fighter Action Kit for ways to make vaccination convenient
 - A Call to Action!

Flu Fighter Action Kit

How to Implement an Influenza Vaccination Campaign

1. Consider the evidence
2. Initiate the planning process
3. Plan the campaign
4. Promote the campaign
5. Conduct the campaign



1. Consider the Evidence

- Influenza Vaccination of Health-Care Personnel: Recommendations of the Healthcare Infection Control Practices Advisory Committee (HICPAC) and the Advisory Committee on Immunization Practices (ACIP)
- Prevention and Control of Influenza: Recommendations of the Advisory Committee on Immunization Practices (ACIP), 2007
- Joint Commission on Accreditation of Healthcare Organizations (JCAHO) infection control standard includes vaccinations to staff

2. Initiate the Planning Process

- Obtain support from administration and assemble a team
 - Strategies to obtain commitment
 - Template policy statement
 - Template talking points
 - Flu facts and responses to common concerns



3. Plan the Campaign

- Post-campaign assessment worksheet
- List of campaign considerations
- List of strategies
- Materials
 - Instructions for use of VIS
 - Michigan VIS facts
 - Standing orders
 - Declination statements
 - VAR for adults
 - Screening questionnaire
 - VAERS information
 - Supplies checklist
- Planning and implementing an employee immunization campaign checklist / calendar



4. Promote the Campaign

- Promotional Materials
- Communication strategies
 - Template letter from management
 - Template e-mails
 - Announcements
 - Newsletter samples



5. Conduct the Campaign

- Documentation Cheat Sheet
- MCIR Brochure
- Post-Campaign Assessment Worksheet
- Post-Campaign Announcement



It was Recommended by my
Doctor



It was
Recommended
by my
Supervisor

I Received a Written
Request for Compliance



**Seasonal Influenza
Preparedness**

**Pandemic Influenza
Preparedness**

DHHS Draft Guidance on Allocating and Targeting Pandemic Flu Vaccine

Category	Target group	Estimated number	Severe	Moderate	Less severe
Homeland and national security	Deployed and mission critical pers.	700,000	Tier 1	Tier 1	Tier 1
	Essential support & sustainment pers.	650,000	Tier 2	Tier 2	Tier 2
	Intelligence services	150,000			
	Border protection personnel	100,000			
	National Guard personnel	500,000			
	Other domestic national security pers.	50,000			
	Other active duty & essential suppt.	1,500,000	Tier 3	Tier 3	Not targeted
Health care and community support services	Public health personnel	300,000	Tier 1	Tier 1	Tier 1
	Inpatient health care providers	3,200,000			
	Outpatient and home health providers	2,000,000			
	Health care providers in LTCFs	800,000			
	Community suppt. & emergency mgt.	600,000	Tier 2	Tier 2	Not targeted
	Other important health care personnel	500,000	Tier 3	Tier 3	Not targeted
Critical	Emergency Medical Service personnel	2,000,000	Tier 1	Tier 1	Tier 1

Thank You!